

**This Page Is Inserted by IFW Operations
and is not a part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- **BLACK BORDERS**
- **TEXT CUT OFF AT TOP, BOTTOM OR SIDES**
- **FADED TEXT**
- **ILLEGIBLE TEXT**
- **SKEWED/SLANTED IMAGES**
- **COLORED PHOTOS**
- **BLACK OR VERY BLACK AND WHITE DARK PHOTOS**
- **GRAY SCALE DOCUMENTS**

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problems Mailbox.**

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification:

A47F 5/00

A1

(11) International Publication Number:

WO 00/25640

(43) International Publication Date:

11 May 2000 (11.05.00)

(21) International Application Number: PCT/US99/25505

(22) International Filing Date: 29 October 1999 (29.10.99)

(30) Priority Data:

60/106,729	2 November 1998 (02.11.98)	US
60/108,469	14 November 1998 (14.11.98)	US
09/406,531	27 September 1999 (27.09.99)	US

(71) Applicant: INNOVATIVE OFFICE PRODUCTS, INC.
[US/US]: 2100 Liberty Street, Easton, PA 18042 (US).

(72) Inventor: ODDSEN, Odd, N., Jr.; 2100 Liberty Street, Easton, PA 18042 (US).

(74) Agents: BLASKO, John, P. et al.; J.P. Blasko Professional Corp., 107 North Broad Street, Doylestown, PA 18901 (US).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

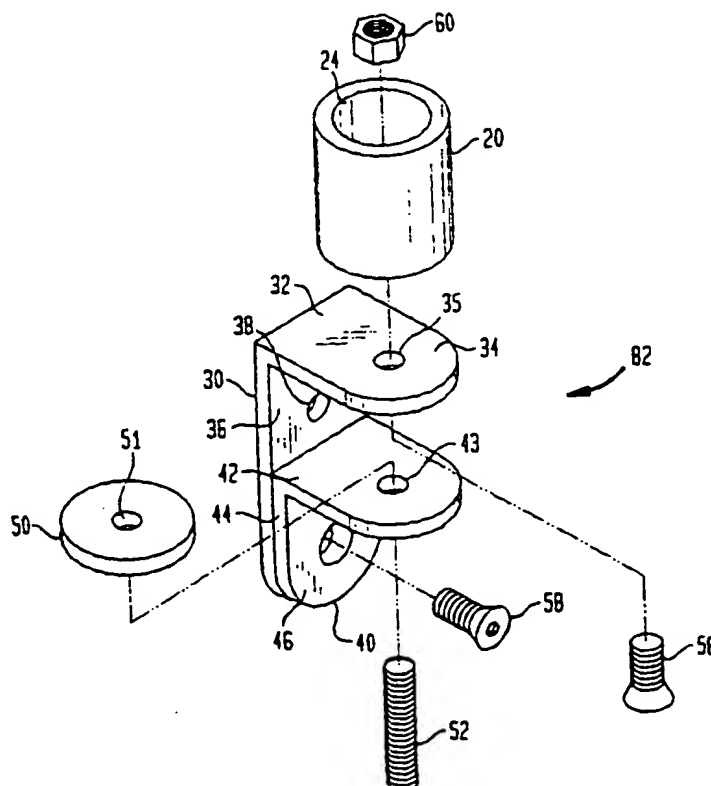
With international search report.
With amended claims.

11017 U.S. PTO
09/884540
06/19/01

(54) Title: CONFIGURABLE MOUNT

(57) Abstract

Apparatuses and systems for mounting an adjustable arm for a peripheral device. The systems are configurable mounting systems for mounting an arm device. The systems comprise a set of components which may be configured to create a clamp mount (82), a wall mount, a "reverse" wall mount, or table or "flat" mount, a panel mount, and a slat mount. The components of the mounting apparatuses and systems all include a shaft holder (20) for receiving the shaft of the arm apparatus. A variety of attachment configurations are provided to attach the shaft holder (20) to a surface.



CONFIGURABLE MOUNT

Field Of The Invention

The present invention relates to apparatuses and systems for mounting an adjustable arm for a peripheral device such as a computer display screen, a keyboard, a telephone or the like.

Background of Invention

Various types of devices for mounting an arm are known in the art. These mounting devices are usually designed for a particular arm and for mounting the arm to a particular surface, such as a wall or a desk. These devices normally comprise a holder for holding the arm. The size of the holder depends on the size of the arm. If the mounting device is to be used to mount an arm on a desk the device will generally include a plate attached to the holder. The plate will be either directly screwed into the desk or the plate may include a clamp that can be clamped to the desk. If the mounting device is to mount the arm to a wall, it will normally include a bracket attached to the holder. The bracket is then attached directly to the wall.

A problem with the prior art mounts is that they are designed specific to each arm and each configuration (wall mount or desk mount). Thus, the distributors of these items must keep a wide variety available in stock. Moreover, the end user has no flexibility. That is, if the end user

starts with a wall mount configuration and decides to change to a desk mount configuration, a new mounting device will be required. Thus, there is a need for an adaptable and configurable mounting device that will provide end users with flexibility and reduce the storage requirements on distributors.

Summary Of The Invention

Apparatuses and configurable mounting systems for mounting an arm device are disclosed. The arm device may be attached to a peripheral device, which may be an electronic device such as a computer display screen, a keyboard, a telephone or the like.

The systems comprise a set of components which may be configured to create apparatuses including a clamp mount, a wall mount, a "reverse" wall mount, or table or "flat" mount. In addition, the systems may comprise components which may be configured to create a panel mount and a slat wall mount.

The mounting systems have many benefits and advantages to the consumer, distributor and manufacturer. The consumer obtains more than one different mounting option for the price of a single mount. The systems also provide flexibility of providing a different mounting configuration in the future, if the consumer decides to move the arm or reconfigure the mount. A distributor of the mounting systems benefits by being relieved from maintaining an

WO 00/25640

inventory of each of the different types of mounts. Also, the mounting systems may be efficiently packaged since the component elements are preferably no wider than the width of a typical arm apparatus. There are several advantages to the manufacturer including a decrease in inventory costs similar to that of the distributor, a lowering of the "piece" price of the mount since components of the systems may be used in a number of configurations and distinct castings are not required for each type of mount, and a decrease in labor costs since the consumer completes final assembly in the configuration she desires.

The components of the mounting systems include a shaft holder for receiving the shaft of the arm device, a long "L" member, and short "L" member, a clamping plate, and clamping screw. In a preferred embodiment, these components are used in conjunction with standard hardware including a long bolt with a hex head, a short screw, a pair of screws having flat tapered countersunk heads, a pair of wall screws, and a single nut. With these components and hardware, at least four of the above-noted mounting configurations may be achieved by the mounting systems of the present invention.

In another aspect, the configurable mount invention additionally comprises adapter brackets that are used to secure the mount to conventional office panel systems and both single and dual slot wall systems.

Brief Description Of The Drawings

The accompanying drawings, which are incorporated in and form a part of the specification, illustrate the embodiments of the present invention and, together with the description serve to explain the principles of the invention.

In the drawings:

FIG. 1 is a perspective view of an apparatus according to the present invention in a reverse wall mount configuration and the orientation of the arm device to the mount;

FIG. 2 is a perspective view of an apparatus according to the present invention in a clamp configuration mounted to a table top;

FIG. 3 is an exploded perspective view of a clamp configuration of the present invention;

FIG. 4 is a perspective view of an apparatus according to the present invention in a wall mount configuration mounted to a wall;

FIG. 5 is an exploded perspective view of a wall mount configuration of the present invention;

FIG. 6 is a perspective view of an apparatus according to the present invention in a reverse wall mount configuration mounted to a wall;

FIG. 7 is an exploded perspective view of a reverse wall mount configuration of the present invention;

FIG. 8 is a perspective view of an apparatus according to the present invention in a table mount configuration mounted to a table top;

FIG. 9 is an exploded view of a table mount configuration of the present invention;

FIG. 10A is a top elevation view of a shaft holder according to the present invention;

FIG. 10B is a cross-section side elevation view of the shaft holder shown in FIG. 10A along line 10B-10B;

FIG. 11A is a top elevation view of a clamping plate according to the present invention;

FIG. 11B is a side elevation view of the clamping plate shown in FIG. 11A;

FIG. 12A is a front elevation view of a long "L" member according to the present invention;

FIG. 12B is a side elevation of the long "L" member shown in FIG. 12A;

FIG. 12C is a top elevation view of the long "L" member shown in FIG. 12A;

FIG. 13A is a front elevation view of a short "L" member according to the present invention;

FIG. 13B is a side elevation of the short "L" member shown in FIG. 13A;

FIG. 13C is a top elevation view of the short "L" member shown in FIG. 13A;

FIG. 14 is an exploded view of a mount configuration of the present invention with an adapter bracket to secure the mount to a office panel wall system;

FIG. 15 is a perspective view of the panel wall mount configuration;

FIG. 16 is an exploded view of a mount configuration of the present invention with an adapter bracket arrangement to secure the mount to a slatwall having an upwardly facing slat;

FIG. 17 is an exploded view of a mount configuration of the present invention with an adapter bracket arrangement to secure the mount to a slatwall having upwardly and downwardly facing slats;

FIG. 18 is an exploded perspective view of a narrow clamp configuration of the present invention;

FIG. 19 is a side elevation view of the narrow short "L" member and the narrow clamping plate of the present invention.

Detailed Description Of The Preferred Embodiment

In describing a preferred embodiment of the invention illustrated in the drawings, in which like numerals represent like parts, specific terminology will be used for the sake of clarity. However, the invention is not intended to be limited to the specific terms so selected, and it is to be understood that each specific term includes all

technical equivalents which operate in a similar manner to accomplish a similar purpose.

With reference to the drawings, in general, and FIGS. 1 through 19 in particular; the apparatuses and systems of the present invention are disclosed.

Reference is made to FIG. 1, 3, 5, 7, 9, 10A and 10B which illustrate mounting apparatuses 84, 82, 80, 86 for mounting a device 10 having an arm 18 on a surface 2, 4. Each apparatus includes a shaft holder 20 that has plurality of walls 22. It is anticipated that the plurality of walls 22 can merge to embody a shaft holder 20 that is circular. The walls 22 define a receptacle 24 having an enclosed bottom 26 and an opened top portion. The receptacle 24 is shaped to receive an arm device 10 having a cylindrical shaft 14. The shaft 14 of the arm device 10 may be removably inserted in receptacle 24 through the opened top portion as indicated by arrow 6, in which it may freely rotate.

In one embodiment (not shown), a washer may be placed in the bottom 26 of the receptacle 24 to create a more secure fit between the shaft 14 and the receptacle 24. Preferably, the washer is made of plastic. In yet another embodiment (not shown), a bushing can be included on the interior sides of the walls 22 of the receptacle 24 to create less friction and a more secure fit between the shaft 14 and the receptacle 24.

The mounting apparatuses of the current invention each include an attachment means to attach the shaft holder 20 to

WO 00/25640

a surface. A wide variety of attachment means may be employed to attach the shaft holder 20 to a surface. The preferred attachment means, along with alternative attachment means, are subsequently described.

5 In preferred embodiments, the apparatuses further comprise a cylindrical threaded rod and a nut 60. The bottom 26 further comprises a hole 28 for receiving the rod. The shaft holder 20 is attached to a long "L" member 30 or to a surface 2,4 by passing the cylindrical threaded rod through 10 the bottom 26 hole 28 and through the long "L" member 30 or the surface 2,4, and securing the nut 60 to the rod. When the shaft holder 20 is attached to a long "L" member 30, the long "L" member 30 in turn is attached to a surface 2,4.

15 FIG. 1, 6, 7, 10A, 10B, and 12A through 12C show the mounting system of the present invention configured as a reverse wall mount apparatus 84 having a long "L" member 30. The long "L" member 30 has a first flange 32 and a second flange 36 that are generally perpendicularly attached to one 20 another. First flange 32 has an "a" side 33 and a "b" side 34. The "a" side 33 is the side of first flange 32 that is facing second flange 36. The "b" side 34 is opposite the "a" side 33 of first flange 32.

Long "L" member 30 is secured by at least one wall 25 screw 54 threaded through at least one threaded hole 38 in second flange 36, and into wall 4. Preferably, second flange 36 contains two threaded holes 38, arranged

vertically to each other; and the long "L" member is secured by two wall screws 54. In a preferred embodiment, the wall screws 54 are made of wood, and they are secured to a stud in wall 4. Alternatively, any type of threaded cylindrical rod may be used in place of the at least one wall screw 54, provided the rod is of sufficient strength to hold the apparatus 84 to the wall 4.

In this embodiment, the shaft holder 20 is secured to the "b" side 34 of first flange 32 of long "L" member 30 by screw 56, having a flat tapered countersunk head, and nut 60. Preferably, screw 56 is 3/8-16 x 1 inch long. Screw 56 passes through hole 35 of first flange 32 and hole 28 of bottom 26 of shaft holder 20. The head of screw 56 may be received by a recess in the hole 35 on the "a" side of first flange 32. Preferably, bottom 26 has a recess 29 adapted to receive the nut 60.

With reference to FIGS. 2, 3, 10A through 13C, the mounting system configured as a clamp mount apparatus 82 is shown. Shaft holder 20 is secured to "b" side 34 of first flange 32 of long "L" member 30 by screw 56 and nut 60. In a preferred embodiment, screw 56 has a flat tapered countersunk head and dimensions of 3/8-16 x 1 inch long. Hole 35 on the "a" side 33 of first flange 32 has a recess to receive the tapered head of screw 56. The tapered head of screw 56 is adapted to be secured in a countersunk manner in hole 35 such that a flat surface is obtained on "a" side 33 of first flange 32. Screw 56 extends through hole 28 through

WO 00/25640

the bottom 26 of shaft holder 20. A hex nut 60 is secured to screw 56.

Preferably, bottom 26 of shaft holder 20 has a recess 29 adapted to receive the nut 60 which facilitates in the securing of nut 60. Second flange 36 of long "L" member 30 has at least one threaded hole 38. In a preferred embodiment, second flange 36 has two threaded holes 38.

Short "L" member 40 having first flange 42 and second flange 44 in a general perpendicular orientation to each other is attached to the second hole 38 which is the farthest from first flange 32 of long "L" member 30 by screw 58. First flange 42 has a threaded hole 43, and second flange 44 has a recessed hole 45. Preferably, screw 58 has a flat tapered countersunk head and dimensions of 3/8-16 x 1/2 inch long. Screw 58 extends through hole 45 of flange 44 into the lower threaded hole in second flange 36 such that the head of screw 58 is countersunk relative to face 46.

It is to be understood however, that any type of threaded cylindrical rod may be used in place of screw 58, provided the rod is of sufficient strength to hold the short "L" member 40 to the long "L" member 30.

First flange 42 of short "L" member 40 has a threaded hole 43 for receiving clamping screw 52 which is screwed through hole 43 and meets hole 51 of clamping plate 50. Preferably, clamping screw 52 is 1/2-13 x 3 inches long, and

the end of clamping screw 52 is adapted to receive a hex head wrench which is used to tighten the clamp.

Hole 43 is generally centered below hole 35 of first flange 32 of long "L" member 30. The mount is secured to a projecting work surface such as a table top by clamping the surface 2 between "a" side 33 of first flange 32 of long "L" member 30 and the top surface of clamping plate 50. In a preferred embodiment, the clamping plate 50 is made of steel, is circular, and has a 2 inch diameter. A hole 51 is located in the center of clamping plate 50.

In other embodiments (not shown), at least one buffering pad may be placed between "a" side of first flange 32 and the surface 2. In addition, the at least one buffering pad may be alternatively or additionally placed between the top of clamping plate 50 and the surface 2. The buffering pad is shaped similarly to clamping plate 50, having a 2 inch diameter and including a center hole. The buffering pad can protect the surface from abrasion from the apparatus 82. In addition, the buffering pad can create a more secure contact between the apparatus 82 and the surface. While any non-abrasive material could be used to make the buffering pad, a preferred material is neoprene foam. Additionally, the buffering pad may contain an adhesive for adhering to the pad to the "a" side of first flange 32 or to the clamping plate 50.

FIGS. 18 and 19 show the mounting system of the present invention configured as a narrow clamp mount apparatus 90.

WO 00/25640

The narrow clamp mount 90 is similar to the clamp mount 82. Narrow clamp mount 90 utilizes the long "L" member 30 and shaft holder 20 utilized in clamp mount 82. In addition, narrow clamp mount 90 attaches the long "L" member 30 to the shaft holder 20 in the same manner in which they are attached for the clamp mount 82.

The narrow clamp mount 90, however, is adapted to be clamped onto a narrow projecting surface 302, on which the top surface of the projection is deeper than the bottom surface of the projection. A desk having legs or sides is an example of a narrow projecting surface. The narrow clamp mount 90 can be used on a narrow projecting surface 302 that is narrower than the width of the first flange 42 of the short "L" member 40 of clamp mount 82. To fit on the narrow projecting surface 302, first flange 342 of narrow short "L" member 340 is narrower than first flange 42 of short "L" member 40. In addition, a clamping plate is used that is narrower than clamping plate 50. The narrow clamping plate 350 is at least as narrow as first flange 342 of narrow short "L" member 340. Preferably, the narrow clamping plate 350 is in the form of a rectangular clamping bar that has a centered hole 351.

In this embodiment, narrow short "L" member 340 having first flange 342 and second flange 344 in a general perpendicular orientation to each other is attached to the second hole 38 which is the farthest from first flange 32 of long "L" member 30 by screw 58. First flange 342 has a

WO 00/25640

threaded hole 343, and second flange 344 has a recessed hole 345. Preferably, screw 58 has a flat tapered countersunk head and dimensions of 3/8-16 x 1/2 inch long. Screw 58 extends through hole 345 of flange 344 into the lower threaded hole in second flange 36 such that the head of screw 58 is countersunk relative to face 346.

It is to be understood however, that any type of threaded cylindrical rod may be used in place of screw 58, provided the rod is of sufficient strength to hold the narrow short "L" member 340 to the long "L" member 30.

First flange 342 of narrow short "L" member 340 has a threaded hole 343 for receiving clamping screw 52 which is screwed through hole 343 and meets hole 351 of narrow clamping plate 350. Preferably, clamping screw 52 is 1/2-13 x 3 inches long, and the end of clamping screw 52 is adapted to receive a hex head wrench which is used to tighten the clamp.

Hole 343 is positioned off-center below hole 35 of first flange 32 of long "L" member 30. The bottom side of the projecting portion of narrow projecting surface 302 may be narrower than the width of first flange 32 of long "L" member 30. First flange of narrow short "L" member 340 is narrower than first flange 32 of long "L" member 30. As a result, hole 343 is positioned closer than hole 35 to the edge of narrow projecting surface 302.

The mount 90 is secured to a narrow projecting work surface 302 by clamping the surface 302 between "a" side 33

of first flange 32 of long "L" member 30 and the top surface of narrow clamping plate 350. In a preferred embodiment, the narrow clamping plate 350 is made of steel. Buffering pads (not shown) may be utilized similarly to the utilization of the buffering pads for the clamp mount 82. However, in this embodiment, the buffering pad for the narrow clamping plate 350 would be rectangular.

FIGS. 4, 5, 10A, 10B, and 12A through 12C show the mounting system of the present invention configured as a wall mount apparatus 80. Similar to the reverse wall mount apparatus 84 configuration, long "L" member 30 is secured by at least one wall screw 54 threaded through at least one threaded hole 38 in second flange 36, and into wall 4. Preferably, second flange 36 contains two threaded holes 38, arranged vertically to each other, and the long "L" member is secured by two wall screws 54. In a preferred embodiment, the wall screws 54 are made of wood, and they are secured to a stud in wall 4. Alternatively, any type of threaded cylindrical rod may be used in place of the at least one wall screw 54, provided the rod is of sufficient strength to hold the apparatus 80 to the wall 4.

Shaft holder 20 is secured to "a" side 33 of first flange 32 by screw 64 and nut 60. Preferably, screw 64 has dimensions of 3/8-16 x 7/8 inches long. It is also preferred that nut 60 is positioned in recess 29 in the bottom of shaft holder 20.

FIGS. 8, 9, 11A and 11B show the mounting system of the present invention configured as a table or flat mount 86. Table mount 86 comprises shaft holder 20 which is secured to a projecting surface 2, which may be a table top, preferably by passing bolt 62 through hole 28, a hole in surface 1 and hole 51 of clamping plate 50 and securing the same with nut 60. Preferably the bolt 62 has a tapered hex head, and dimensions of 3/8-16 x 2 inches long. In this preferred embodiment, the bottom hole 28 is recessed 29 for receiving the head of the bolt 62.

Preferably, the projecting surface 2 is at least one inch wide and no wider than the length of the bolt 62 with the nut 60 attached. A hole may be drilled in the surface 2 before passing the bolt 62 through the surface. Preferably, the drilled hole has a 3/8 inch diameter.

While the use of a clamping plate 50 is preferred, it may be omitted from the flat mount apparatus 86 configuration.

In other embodiments (not shown), at least one buffering pad may be placed between the bottom of the shaft holder 20 and the surface 2. In addition, the at least one buffering pad may be alternatively or additionally placed between the top of clamping plate 50 and the surface 2. Preferably, the buffering pad is shaped similarly to clamping plate 50, having a 2 inch diameter and including a center hole. The buffering pad can protect the surface from abrasion from the apparatus 86. In addition, the buffering

pad can create a more secure contact between the apparatus 86 and the surface. While any non-abrasive material could be used to make the buffering pad, a preferred material is neoprene foam. Additionally, the buffering pad may contain an adhesive for adhering to the pad to the bottom of the shaft holder 20 or to the top of clamping plate 50..

With reference to FIGS. 14 and 15, the mounting system of the present invention is configured as a panel wall mount apparatus. Typically, conventional panel wall systems have vertically aligned pairs of slots for receiving brackets and the like for securing shelves or table tops to the panel wall. The configurable mount of the present invention may be secured to the vertically aligned pairs of slots thereby permitting the arm apparatus to be secured directly to the panel wall 130. Second flange 36 of long "L" member 30 is attached to bracket 120 by at least one bolt 121 passing through at least one hole 122 on outward face 123 into at least one threaded hole 38 of second flange 36. Preferably, second flange 36 is attached to bracket 120 by two bolts 121 passing through two holes 122 on outward face 123 into two threaded holes 38 of second flange 36. Bracket 123 has a plurality of hooks 126 adapted to engage slots 128 in panel wall 130. Set screws or bolts 124 and 125 are threaded through holes 127 and 129 respectively and press against panel wall 130 to secure bracket 120 in a fixed manner. Preferably, threaded holes 127 and 129 for set screw or bolts 124 and 125 are positioned at the top and bottom of

bracket 120. Preferably, plate 110 is positioned between panel wall 130 and set screws or bolts 124 and 125 to prevent damage to panel wall 130.

Optionally, plate 110 has tabs 114 for engaging a pair of slots 128 to assist in retaining plate 110 in the properly aligned position during assembly. Plate 110 may also have holes 112 to receive or permit at least one bolt 121 to pass through plate 110 in an unobstructed manner when bracket 120 is being secured to second flange 36 of long "L" member 30. Shaft holder 20 is secured to "a" side 33 of first flange 32 of long "L" member 30 as described above.

It is to be understood that any type of threaded cylindrical rod may be used in place of bolts 121 and set screws or bolts 124, 125 provided they are of sufficient strength for their intended purposes.

FIGS. 16 and 17 show the mount of the present invention configured as a slat wall mount apparatus. FIG. 17 illustrates a configuration for mounting to a slatwall 200 having only upwardly facing slats. Second flange 36 of long "L" member 30 is attached to first bracket 210 by at least one bolt passing through at least one hole of face flange 215 into at least one threaded hole 38 of second flange 36. Preferably, second flange 36 is attached to first bracket 210 by bolts 220 and 221 passing through holes 222 and 223 respectively of face flange 215 into two threaded holes 38 of second flange 36. Lip 214 of top flange 212 is adapted to engage an upwardly facing slat 202 of slatwall 200.

First bracket 210 is secured to the slat by set screws or bolts 218 threaded through holes 216 and tightened against face 206 of the slat.

A second bracket 240 has a top flange 242 with lip 244 to engage a lower upwardly facing slat 203. Second bracket 240 has a face flange 245 having a portion 247 thereof angled toward the slat wall 200 and is secured in position on lower slat 203 by set screws or bolts 248 which are threaded through portion 247 and press against the underside of lower slat 203. Second bracket 240 is secured to first bracket 210 by bolts 250 and 251 passing through holes in face flange 245 and slots 230 and 231, respectively, in face flange 215 and nuts 252 and 253. Shaft holder 20 is secured to "a" side 33 of first flange 32 of long "L" member 30 as described above.

It is to be understood that any type of threaded cylindrical rods may be used in place of bolts 220, 221, 250, 251 and set screws or bolts 218, 248 provided they are of sufficient strength for their intended purposes.

FIG. 17 illustrates a configuration of the mounting system of the present invention configured as an upwardly facing and downwardly facing slat wall mount apparatus. This apparatus is adapted for mounting to a slat wall 200 having upwardly and downwardly facing slats. First bracket 210 is secured to long "L" member 30 and the upwardly facing portion of slat 202 in the same manner as described above. In this configuration, a second bracket 260 has a lower

flange 262 with lip 264 to engage the downwardly facing portion of slat 204. Second bracket 260 is secured in position on lower slat 204 by set screws or bolts 248 which are threaded through holes 269 through the bottom of lower flange 262 at an upward angle and press against the outer face 206 of lower slat 204. Second bracket 260 is secured to first bracket 210 by bolts 250 and 251 passing through holes in face flange 245 and slots 230 and 231, respectively, in face flange 215 and nuts 252 and 253.

10 Shaft holder 20 is secured to "a" side 33 of first flange 32 of long "L" member 30 as described above.

It is to be understood that any type of threaded cylindrical rods may be used in place of bolts 250, 251 and set screws or bolts 248 provided they are of sufficient strength for their intended purpose.

15

This invention includes a mounting system that incorporates all or some of the components above described in FIGS. 1 through 19. In conjunction with the components described in FIGS. 1 through 19, the system of the current invention also includes all or some of the configurations above described in relation to FIGS. 1 through 19.

20

In addition to the preferred embodiments previously described in detail, the shaft holder 20 may be attached to a horizontal, vertical or angled surface by attachment means (not shown) including glue, magnets, hook and loop material

25

sold under the trademark VELCRO, tongue and groove assemblies, and the like.

The components of the mounting system may be fabricated using any suitable material such as aluminum, iron, steel
5 other alloys as are well known in the art. Preferably, long "L" member 30, short "L" member 40, shaft holder 20 and clamping plate 50 are cast forged. Any suitable, durable plastic material may be used for "lightweight" applications. In a preferred embodiment, the nut 60 is fabricated from
10 nylon.

Although this invention has been illustrated by reference to specific embodiments, it will be apparent to those skilled in the art that various changes and modifications may be made which clearly fall within the
15 scope of the invention.

Claims

What is claimed is:

5

1. A mounting apparatus for mounting a device having an arm on a surface, said apparatus comprising:

a shaft holder, said shaft holder having a plurality of walls, said walls defining a receptacle having an enclosed
10 bottom and an opened top portion, said receptacle shaped to receive said arm, and said arm being removably insertable into said receptacle through said opened top portion; and
an attachment means, said attachment means attaching said shaft holder to said surface.

15

2. The mounting apparatus as described in claim 1, wherein said plurality of walls form a circular shaft holder.

20

3. A mounting apparatus as described in claim 1, wherein said apparatus further comprises:

a cylindrical threaded rod and a nut;
said bottom further comprising a hole for receiving said rod, said shaft holder being attached to said
25 surface by passing said cylindrical threaded rod through said hole and through said surface, and securing said nut on said rod.

4. A mounting apparatus as described in claim 3,
wherein said rod further comprises a bolt, said bolt further
comprising a tapered hex head, and said bottom hole being
5 recessed for receiving said head of said bolt.

5. A mounting apparatus as described in claim 3,
further comprising a washer, said washer positioned on said
bottom of said shaft holder.

10

6. A mounting apparatus as described in claim 3,
further comprising a clamping plate, said plate having a
centrally located hole, said rod passing through said hole
in said plate after passing through said surface whereby
15 screwing said nut on said rod pushes said plate against said
surface.

7. A mounting apparatus as described in claim 6,
further comprising at least one buffering pad, said at least
20 one buffering pad positioned between said bottom and said
surface.

8. A mounting apparatus as described in claim 6,
further comprising at least one buffering pad, said at least
25 one buffering pad is positioned between said surface and
said clamping plate.

9. A mounting apparatus as described in claim 1,
wherein said apparatus further comprises:

a cylindrical threaded rod and a nut,
said bottom further comprising a hole for receiving
5 said rod, said hole being recessed for receiving said nut;
a long "L" member, said long "L" member being
comprised of a first flange and a second flange, said first
flange being generally perpendicularly attached to said
second flange, said first flange having a bolt hole, and
10 said long "L" member being attached to said shaft holder by
passing said rod through said bolt hole on said long "L"
member and through said hole on said bottom, and securing
said nut on said rod.

15 10. A mounting apparatus as described in claim 9,
further comprising at least one screw, said second flange
having at least one threaded hole, said shaft holder being
attached to a surface by screwing said at least one screw
through said at least one threaded hole and into said
20 surface.

11. A mounting apparatus as described in claim 10,
wherein said first flange has an "a" side and an "b" side,
said "a" side facing upward, and said shaft holder being
25 attached on top of said "a" side, and said rod being
comprised of a screw.

12. A mounting apparatus as described in claim 10,
wherein said first flange has an "a" side and a "b" side,
said "b" side facing upward, and said shaft holder being
attached on top of said "b" side, said rod being comprised
5 of a screw, said screw having a flat tapered countersunk
head, said "a" side of said bolt hole being recessed for
receiving said tapered countersunk head.

13. A mounting apparatus as described in claim 9,
10 wherein said apparatus further comprises:
said first flange of said long "L" member having an
"a" side and a "b" side, said "b" side facing upward, and
said shaft holder being attached on top of said "b" side,
said second flange of said long "L" member further having at
15 least one threaded hole;

said rod being comprised of a screw, said screw having
a flat tapered countersunk head, said "a" side of said bolt
hole being recessed for receiving said tapered countersunk
head;

20 at least one second screw, said at least one second
screw further having a flat tapered countersunk head;

a short "L" member, said short "L" member being
comprised of a first flange and a second flange, said first
flange being generally perpendicularly attached to said
25 second flange, said second flange having a hole, said hole
further having a recess, and said first flange having a
threaded screw hole, said short "L" member being attached to

said long "L" member by screwing said at least one second screw through said hole on said second flange of said short "L" member and through said at least one threaded hole on said long "L" member, said head being recessed in said recess of said hole on said second flange of said short "L" member;

a clamping plate said plate having a top side and a bottom side; and

a clamping screw, said shaft holder being attached to a surface by clamping said surface between said "a" side of said first flange of said long "L" member and said top side of said clamping plate, said clamping screw being screwed through said bolt hole on said second flange of said short "L" member and meeting said bottom side of said clamping plate, said clamping screw pushing said clamping plate upward to engage said surface.

14. The mounting apparatus as described in claim 13, wherein said short "L" member is a narrow short "L" member, said first flange of said short "L" member being narrower than said first flange of said long "L" member, and said clamping plate being a narrow clamping plate, said narrow clamping plate being at least as narrow as said first flange of said short "L" member.

25

15. A mounting apparatus as described in claim 13, further comprising at least one buffering pad, said at least

one buffering pad positioned between said "a" side of said first flange of said long "L" member and said surface.

16. A mounting apparatus as described in claim 15,
5 wherein said at least one buffering pad is positioned between said surface and said clamping plate.

17. A mounting apparatus as described in claim 9,
wherein said surface is a panel wall having vertically
10 aligned slots, said apparatus further comprising:

said first flange of said long "L" member having an "a" side and an "b" side, said "a" side facing upward, and said shaft holder being attached on top of said "a" side, said rod being comprised of a screw, said second flange of said
15 long "L" member further having at least one threaded hole;

a bracket, said bracket having a plurality of hooks, said hooks adapted to engage said slots, said bracket further having at least one hole, said bracket further having two threaded holes;

20 two set screws, each of said set screws passing through one of said two threaded holes and engaging the panel wall; and

at least one bolt, said bracket being attached to said second flange of said long "L" member by passing said at
25 least one bolt through said at least one hole on said bracket and through said at least one threaded hole on said second flange of said long "L" member, said shaft holder

being mounted to said surface by engaging said plurality of hooks in said vertically aligned slots.

18. A mounting apparatus as described in claim 17,
3 wherein one of said two set screws is positioned at the top of said bracket and the second of said two set screws is positioned at the bottom of said bracket.

19. A mounting apparatus as described in claim 17,
10 further comprising a plate, said plate being positioned between said panel wall and said set screws to prevent damage to said panel wall by said screws.

20. A mounting apparatus as described in claim 19,
15 wherein said plate further comprises at least two tabs, said tabs engaging at least two of said slots, said plate further comprising at least one hole, said at least one bolt passing through said at least one hole on said plate, through said at least one hole on said bracket and through said at least
20 one threaded hole on said second flange of said long "L" member.

21. A mounting apparatus as described in claim 9,
wherein said surface is a slat wall having only upwardly
25 facing slats, said apparatus further comprising:

said first flange of said long "L" member having an "a" side and an "b" side, said "a" side facing upward, and said

shaft holder being attached on top of said "a" side, said rod being comprised of a screw, said second flange of said long "L" member further having at least one threaded hole;

a first bracket, said first bracket having a face flange and a top flange, said face flange attached to said top flange, said top flange having a lip, said lip adapted to engage one of said slats, said face flange of said first bracket further having at least one hole, at least two threaded holes, and at least two slots;

at least one bolt, said first bracket being attached to said second flange of said long "L" member by passing said at least one bolt through said at least one hole on said bracket and through said at least one threaded hole on said second flange of said long "L" member, said shaft holder being mounted to said surface by engaging said lip in one of said upwardly facing slots;

at least two set screws, each of said at least two set screws passing through one of said two threaded holes and engaging the slat wall;

a second bracket, said second bracket having a top flange, said top flange having a lip, said lip engaging of one of said upwardly facing slats, said second bracket further having a face flange, said face flange being attached to said top flange, said face flange having at least two holes, said face flange further having an angled portion, said angled portion having at least two set screw holes;

at least two bracket bolts and at least two bracket nuts, said at least two bracket bolts and at least two bracket nuts attaching said second bracket to said first bracket, by passing each of said at least two bracket bolts through one of said at least two holes in said face flange of said second bracket and through said at least two slots, and securing one of said at least two bracket nuts on each said at least two bracket bolts;

at least two bracket set screws, each of said at least two bracket set screws passing through one of said at least two set screw holes in said angled portion, and engaging the slat wall.

22. A mounting apparatus as described in claim 9, wherein said surface is a slat wall having upwardly facing slats and downwardly facing slats, said apparatus further comprising:

said first flange of said long "L" member having an "a" side and an "b" side, said "a" side facing upward, and said shaft holder being attached on top of said "a" side, said rod being comprised of a screw, said second flange of said long "L" member further having at least one threaded hole;

a first bracket, said first bracket having a face flange and a top flange, said face flange attached to said top flange, said top flange having a lip, said lip adapted to engage one of said upwardly facing slats, said face

flange of said first bracket further having at least one hole, at least two threaded holes, and at least two slots;

at least one bolt, said first bracket being attached to said second flange of said long "L" member by passing said
5 at least one bolt through said at least one hole on said bracket and through said at least one threaded hole on said second flange of said long "L" member, said shaft holder being mounted to said surface by engaging said lip in one of said upwardly facing slots;

10 at least two set screws, each of said at least two set screws passing through one of said two threaded holes and engaging the slot wall;

a second bracket, said second bracket having a lower flange, said lower flange having a lip, said lip engaging a
15 downwardly facing slot, said lower flange further having at least two set screw holes, said second bracket further having a face flange, said face flange being attached to said lower flange, said face flange having at least two holes;

20 at least two bracket bolts and at least two bracket nuts, said at least two bracket bolts and at least two bracket nuts attaching said second bracket to said first bracket, by passing each of said at least two bracket bolts through one of said at least two holes in said face flange
25 of said second bracket and through one of said at least two slots, and securing each of said at least two bracket nuts on each of said at least two bracket bolts; and

at least two bracket set screws, each of said at least two bracket set screws passing through one of said at least two set screw holes in an upwardly angled direction, and said at least two bracket set screws engaging the slot wall.

5

23. A mounting system for mounting a device having an arm on a surface, said system comprising:

(a) a set of components, said components comprised of:

10

(1) a shaft holder, said shaft holder having a plurality of walls, said walls defining a receptacle having an enclosed bottom and an opened top portion, said receptacle shaped to receive said arm, and said arm being removably insertable into said receptacle through said opened top portion, said bottom further comprising a hole for receiving a threaded cylindrical rod, said hole being recessed;

15

20

(2) a plurality of threaded cylindrical rods and a nut;

(3) a clamping plate, said plate having a centrally located hole;

25

(4) a long "L" member, said long "L" member being comprised of a first flange and a second flange, said first flange being generally perpendicularly attached to said

second flange, said first flange further having an "a" side and a "b" side, said first flange having a bolt hole, and said second flange having at least one threaded hole;

5

(5) a short "L" member, said short "L" member being comprised of a first flange and a second flange, said first flange being generally perpendicularly attached to said second flange, said second flange having a hole, and said first flange further having a threaded screw hole, and

10

(6) a clamping screw; and

(b) a series of configurations of said components, each said configuration creating an apparatus for mounting a device having an arm on a surface.

15

24. The mounting system as described in claim 23, wherein said apparatuses are in a group consisting essentially of a clamp mount, a wall mount, a reverse wall mount, and a flat mount.

20

25. The mounting system as described in claim 23, wherein said configurations are comprised of:

25

(a) passing one of said plurality of threaded cylindrical rods through said bottom hole, through said

surface, through said clamping plate hole, and screwing said nut on said threaded cylindrical rod;

(b) facing said "a" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(c) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface; and

(d) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and

through said hole on said bottom, and securing said nut on
said one of said plurality of threaded cylindrical rods,
screwing one of said plurality of threaded cylindrical rods
through said hole on said second flange of said short "L"
5 member and through said at least one threaded hole on said
long "L" member, positioning said surface between said "a"
side of said first flange of said long "L" member and said
top side of said clamping plate, screwing said clamping
screw through said threaded screw hole on said first flange
10 of said short "L" member and meeting said bottom side of
said clamping plate, said clamping screw pushing said
clamping plate upward to engage said surface.

26. The mounting system of claim 23 wherein said
15 components further comprise a narrow short "L" member, said
narrow short "L" member being narrower than said first
flange of said long "L" member, and further comprising a
narrow clamping plate.

20 27. The mounting system as described in claim
26, wherein said configurations are further comprised of:

(a) passing one of said plurality of threaded
cylindrical rods through said bottom hole, through said
surface, through said clamping plate hole, and screwing said
25 nut on said threaded cylindrical rod;

(b) facing said "a" side of said first flange of said
long "L" member in an upward direction, positioning said

shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(c) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(d) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said one of said plurality of threaded cylindrical rods, screwing one of said plurality of threaded cylindrical rods through said hole on said second flange of said short "L"

member and through said at least one threaded hole on said long "L" member, positioning said surface between said "a" side of said first flange of said long "L" member and said top side of said clamping plate, screwing said clamping screw through said threaded screw hole on said first flange of said short "L" member and meeting said bottom side of said clamping plate, said clamping screw pushing said clamping plate upward to engage said surface; and

(e) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said one of said plurality of threaded cylindrical rods, screwing one of said plurality of threaded cylindrical rods through said hole on said second flange of said narrow short "L" member and through said at least one threaded hole on said long "L" member, positioning said surface between said "a" side of said first flange of said long "L" member and said top side of said narrow clamping plate, screwing said clamping screw through said threaded screw hole on said first flange of said narrow short "L" member and meeting said bottom side of said narrow clamping plate, said clamping screw pushing said narrow clamping plate upward to engage said surface.

28. The mounting system as described in claim 23,
wherein said components are further comprised of:

a bracket, said bracket having a plurality of hooks,
said hooks adapted to engage slots on a panel wall having
5 slots, said bracket further having at least one hole, said
bracket further having two threaded holes;
two set screws; and
at least one bolt.

10 29. The mounting system as described in claim 28,
wherein said configurations are further comprised of:

(a) passing one of said plurality of threaded
cylindrical rods through said bottom hole, through said
surface, through said clamping plate hole, and screwing said
15 nut on said threaded cylindrical rod;

(b) facing said "a" side of said first flange of said
long "L" member in an upward direction, positioning said
shaft holder on top of said "a" side, passing one of said
plurality of threaded cylindrical rods through said bolt
20 hole on said first flange of said long "L" member and
through said hole on said bottom, and securing said nut on
said threaded cylindrical rod, and further screwing said at
least one of said plurality of threaded cylindrical rods
through said at least one threaded hole on said long "L"
25 member and into a surface;

(c) facing said "b" side of said first flange of said
long "L" member in an upward direction, positioning said

shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(d) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said one of said plurality of threaded cylindrical rods, screwing one of said plurality of threaded cylindrical rods through said hole on said second flange of said short "L" member and through said at least one threaded hole on said long "L" member, positioning said surface between said "a" side of said first flange of said long "L" member and said top side of said clamping plate, screwing said clamping screw through said threaded screw hole on said first flange of said short "L" member and meeting said bottom side of said clamping plate, said clamping screw pushing said clamping plate upward to engage said surface; and

(e) facing said "a" side of said first flange of said long "L" member in an upward direction, positioning said

shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod,

passing each of said set screws through one of said two threaded holes on said bracket and engaging the panel wall, attaching said bracket to said second flange of said long "L" member by passing said at least one bolt through said at least one hole on said bracket and through said at least one threaded hole on said second flange of said long "L" member, and mounting said shaft holder to said surface by engaging said plurality of hooks in the vertically aligned slots.

30. The mounting system as described in claim 28, wherein said components are further comprised of:

two set screws;
a plate, said plate comprising at least two tabs, said plate further comprising at least one hole.

31. The mounting system as described in claim 30, wherein said configurations are further comprised of:

(a) passing one of said plurality of threaded cylindrical rods through said bottom hole, through said

surface, through said clamping plate hole, and screwing said nut on said threaded cylindrical rod;

(b) facing said "a" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(c) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(d) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and

through said hole on said bottom, and securing said nut on said one of said plurality of threaded cylindrical rods, screwing one of said plurality of threaded cylindrical rods through said hole on said second flange of said short "L" member and through said at least one threaded hole on said long "L" member, positioning said surface between said "a" side of said first flange of said long "L" member and said top side of said clamping plate, screwing said clamping screw through said threaded screw hole on said first flange of said short "L" member and meeting said bottom side of said clamping plate, said clamping screw pushing said clamping plate upward to engage said surface; and (e) facing said "a" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod,

positioning one of said two set screws at the top of said bracket and positioning the second of said two set screws at the bottom of said bracket,

position said plate between said panel wall and said set screws to prevent damage to said panel wall by said set screws,

engaging said tabs on at least two of said slots, and

passing said at least one bolt through said at least one hole on said plate, through said at least one hole on said bracket and through said at least one threaded hole on said second flange of said long "I" member.

5

32. The mounting system as described in claim 23, wherein said components further comprise:

a first bracket, said first bracket having a face flange and a top flange, said face flange attached to said top flange, said top flange having a lip, said lip adapted to engage a slat on a slat wall surface, said face flange of said first bracket further having at least one hole, at least two threaded holes, and at least two slots;

at least one bolt;

15 at least two set screws;

a second bracket, said second bracket having a top flange, said top flange having a lip, said lip adapted to engage an upwardly facing slat, said second bracket further having a face flange, said face flange being attached to said top flange, said face flange having at least two holes, said face flange further having an angled portion, said angled portion having at least two set screw holes;

at least two bracket bolts and at least two bracket nuts;

25 at least two bracket set screws.

33. The system as described in claim 32, wherein said configurations further comprise:

(a) passing one of said plurality of threaded cylindrical rods through said bottom hole, through said surface, through said clamping plate hole, and screwing said nut on said threaded cylindrical rod;

(b) facing said "a" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(c) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(d) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said one of said plurality of threaded cylindrical rods, screwing one of said plurality of threaded cylindrical rods through said hole on said second flange of said short "L" member and through said at least one threaded hole on said long "L" member, positioning said surface between said "a" side of said first flange of said long "L" member and said top side of said clamping plate, screwing said clamping screw through said threaded screw hole on said first flange of said short "L" member and meeting said bottom side of said clamping plate, said clamping screw pushing said clamping plate upward to engage said surface; and (e) facing said "a" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod;

attaching said first bracket to said second flange of said long "L" member by passing said at least one bolt through said at least one hole on said bracket and through

said at least one threaded hole on said second flange of said long "L" member, said shaft holder being mounted to said surface by engaging said lip in an upwardly facing slot,

5 passing each of said at least two set screws through one of said two threaded holes and engaging the slat wall, passing each of said at least two bracket bolts through one of said at least two holes in said face flange of said second bracket and through said at least two slots, and
10 securing said at least two bracket nuts on said at least two bracket bolts,

engaging said lip of said second bracket in an upwardly facing slat, and

passing each of said at least two bracket set screws
15 through one of said at least two bracket set screw holes in said angled portion, and engaging the slat wall.

34. The mounting system as described in claim 23 wherein said components further comprise:

20 a first bracket, said first bracket having a face flange and a top flange, said face flange attached to said top flange, said top flange having a lip, said lip adapted to engage an upwardly facing slat on a slat wall surface, said face flange of said first bracket further having at
25 least one hole, at least two threaded holes, and at least two slots;

at least one bolt;

at least two set screws;

a second bracket, said second bracket having a lower flange, said lower flange having a lip, said lip engaging a downwardly facing slot on a slot wall surface, said lower
5 flange further having at least two set screw holes, said second bracket further having a face flange, said face flange being attached to said lower flange, said face flange having at least two holes;

at least two bracket bolts and at least two bracket
10 nuts; and

at least two bracket set screws.

35. The system as described in claim 34, wherein said configurations further comprise:

15 (a) passing one of said plurality of threaded cylindrical rods through said bottom hole, through said surface, through said clamping plate hole, and screwing said nut on said threaded cylindrical rod;

(b) facing said "a" side of said first flange of said
20 long "L" member in an upward direction, positioning said shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on
25 said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods

WO 00/25640

through said at least one threaded hole on said long "L" member and into a surface;

(c) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod, and further screwing said at least one of said plurality of threaded cylindrical rods through said at least one threaded hole on said long "L" member and into a surface;

(d) facing said "b" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "b" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said one of said plurality of threaded cylindrical rods, screwing one of said plurality of threaded cylindrical rods through said hole on said second flange of said short "L" member and through said at least one threaded hole on said long "L" member, positioning said surface between said "a" side of said first flange of said long "L" member and said top side of said clamping plate, screwing said clamping screw through said threaded screw hole on said first flange of said short "L" member and meeting said bottom side of

WO 00/25640

said clamping plate, said clamping screw pushing said clamping plate upward to engage said surface; and

(e) facing said "a" side of said first flange of said long "L" member in an upward direction, positioning said shaft holder on top of said "a" side, passing one of said plurality of threaded cylindrical rods through said bolt hole on said first flange of said long "L" member and through said hole on said bottom, and securing said nut on said threaded cylindrical rod,

10 attaching said first bracket to said second flange of said long "L" member by passing said at least one bolt through said at least one hole on said bracket and through said at least one threaded hole on said second flange of said long "L" member, said shaft holder being mounted to
15 said surface by engaging said lip in said upwardly facing slot,

passing each of said at least two set screws through one of said two threaded holes and engaging the slot wall,

engaging said lip of said second bracket in a
20 downwardly facing slot,

attaching said second bracket to said first bracket by passing each of said at least two bracket bolts through one of said at least two holes in said face flange of said second bracket and through said at least two slots, and
25 securing said at least two bracket nuts on said at least two bracket bolts, and

WO 00/25640

passing each of said at least two set screws through one of said at least two set screw holes in an upwardly angled direction, and said at least two set screws engaging the slot wall.

AMENDED CLAIMS

[received by the International Bureau on 4 April 2000 (04.04.00);
original claims 1 and 2 cancelled; original claims 3 and 9 amended;
new claims 36-68 added; remaining claims unchanged (18 pages)]

3. A mounting apparatus for mounting a device having
an arm on a surface, said apparatus comprising:

a shaft holder, said shaft holder having a plurality of
walls, said walls defining a receptacle having an enclosed
bottom with a hole formed therein and an opened top portion,
said receptacle shaped to receive said arm, and said arm
being removably insertable into said receptacle through said
opened top portion; and

a cylindrical threaded rod and a nut, wherein said
shaft holder is attached to said surface by passing said
cylindrical threaded rod through said bottom hole and
through said surface, and securing said nut on said rod.

4. A mounting apparatus as described in claim 3,
wherein said rod further comprises a bolt, said bolt further
comprising a tapered hex head, and said bottom hole being
recessed for receiving said head of said bolt.

5. A mounting apparatus as described in claim 3,
further comprising a washer, said washer positioned on said
bottom of said shaft holder.

WO 00/25640

6. A mounting apparatus as described in claim 3,
further comprising a clamping plate, said plate having a
centrally located hole, said rod passing through said hole
in said plate after passing through said surface whereby
5 screwing said nut on said rod pushes said plate against said
surface.

7. A mounting apparatus as described in claim 6,
further comprising at least one buffering pad, said at least
10 one buffering pad positioned between said bottom and said
surface.

8. A mounting apparatus as described in claim 6,
further comprising at least one buffering pad, said at least
15 one buffering pad is positioned between said surface and
said clamping plate.

9. A mounting apparatus for mounting a device having
an arm on a surface, said apparatus comprising:
20 a cylindrical threaded rod and a nut;
a shaft holder, said shaft holder having a plurality of
walls, said walls defining a receptacle having an enclosed
bottom and an opened top portion, said receptacle shaped to
receive said arm, and said arm being removably insertable
25 into said receptacle through said opened top portion, said
bottom having a hole formed therein for receiving said rod

WO 00/25640

and having a recess formed around said hole for receiving said nut; and

a long "L" member, said long "L" member being comprised of a first flange and a second flange, said first flange being generally perpendicularly attached to said second flange, said first flange having a bolt hole, and said long "L" member being attached to said shaft holder by passing said rod through said bolt hole on said long "L" member and through said hole on said bottom, and securing said nut on said rod.

10. A mounting apparatus as described in claim 9, further comprising at least one screw, said second flange having at least one threaded hole, said shaft holder being attached to a surface by screwing said at least one screw through said at least one threaded hole and into said surface.

11. A mounting apparatus as described in claim 10, wherein said first flange has an "a" side and an "b" side, said "a" side facing upward, and said shaft holder being attached on top of said "a" side, and said rod being comprised of a screw.

WO 00/25640

passing each of said at least two set screws through one of said at least two set screw holes in an upwardly angled direction, and said at least two set screws engaging the slat wall.

5

36. An apparatus for mounting a device to a surface, the apparatus comprising:

a shaft holder having a plurality of walls, a bottom having a first hole formed therein, and an open top so as to form a receptacle for receiving the device, wherein the device is removably positionable within said shaft holder;

10 a threaded rod positioned so as to extend through said first hole;

a nut in threaded engagement with said threaded rod;

15 and

an attachment means for attaching said shaft holder to the surface.

37. The apparatus as described in claim 36, wherein

20 said plurality of walls form a circular shaft holder.

38. The apparatus as described in claim 36, wherein said attachment means includes said threaded rod and said nut, and attaches said shaft holder to the surface by

25 passing said threaded rod through said first hole and through a hole in the surface, and securing said nut on a portion of said threaded rod that extends below the surface.

WO 00/25640

39. The apparatus as described in claim 38, wherein said threaded rod includes a tapered head, and the bottom of said shaft holder includes a recessed portion for receiving said tapered head.

5

40. The apparatus as described in claim 38, further comprising a washer positioned on the bottom of said shaft holder.

10

41. The apparatus as described in claim 38, wherein said attachment means further includes a clamping plate located below the surface and having a centrally located hole therein, said threaded rod passing through said centrally located hole, and said nut being secured on said threaded rod below said clamping plate so as to push said clamping plate against the surface.

15

42. The apparatus as described in claim 38, wherein said attachment means further includes at least one buffering pad positioned between the bottom of said shaft holder and the surface.

20

43. The apparatus as described in claim 41, wherein said attachment means further includes at least one buffering pad positioned between the surface and said clamping plate.

25

44. The apparatus as described in claim 36, wherein said attachment means includes a first member having a first flange and a second flange generally perpendicularly attached to said first flange, said first flange having a second hole formed therein, and said first member attached to said shaft holder by passing said threaded rod through said second hole and said first hole and securing said nut on said threaded rod.

45. The apparatus as described in claim 44, wherein said attachment means further includes at least one screw and at least a third hole formed in said second flange, and said attachment means is attached to the surface by screwing said at least one screw through said at least a third hole and into the surface.

46. The apparatus as described in claim 44, wherein said threaded rod includes a flat tapered counter sunk head, said first flange has a recessed portion surrounding said second hole for receiving said flat tapered counter sunk head, and the bottom of said shaft holder has a recessed portion surrounding said second hole for receiving said nut.

47. The apparatus as described in claim 44, wherein said attachment means further includes at least a third hole formed in said second flange;

a second member having a third flange and a fourth flange generally perpendicularly attached to said third flange, said third flange having a fourth hole formed therein, and said fourth flange having at least a fifth hole
5 formed therein;

a clamping mechanism including a clamping plate and an adjustment means engageable with said clamping plate; and

at least one screw, wherein said first member is attached to said second member by screwing said at least one
10 second screw through said third hole and said fifth hole, and said shaft holder is attached to the surface by clamping said surface between said first flange and said clamping plate, said adjustment means passing through said fourth hole and engaging and pushing said clamping plate into the
15 surface.

48. The apparatus as described in claim 47, wherein said attachment means further includes at least one buffering pad, said at least one buffering pad positioned
20 between said first flange and the surface.

49. The apparatus as described in claim 47, wherein said attachment means further comprises at least one buffering pad, said at least one buffering pad positioned
25 between the surface and said clamping plate.

50. The apparatus as described in claim 44, wherein the surface is a panel wall having vertically aligned slots, and said attachment means further includes

at least a third hole formed in said second flange;

5 a bracket having a plurality of hooks adapted to engage the vertically aligned slots, and at least a fourth hole formed therein, said bracket being mounted to the surface by engaging said plurality of hooks with vertically aligned slots; and

10 at least one bolt, wherein said at least one bolt is passed through said at least a third hole and through said at least a fourth hole to secure said bracket to said first member.

15 51. The apparatus as described in claim 50, wherein said attachment means further includes at least a fifth hole formed in said bracket, and at least one screw which is passed through said at least a fifth hole to engage with the panel wall.

20

52. The apparatus as described in claim 51, wherein said attachment means further comprises a plate, said plate being positioned between the panel wall and said bracket to prevent damage to the panel wall from said at least one

25 screw.

53. The apparatus as described in claim 52, wherein said plate includes at least one tab for engaging at least one of the vertically aligned slots, and at least a sixth hole for passing said at least one bolt through so as to connect said plate to said bracket and said first member.

54. The apparatus as described in claim 44, wherein the surface is a slat wall having only upwardly facing slats, and said attachment means further includes
10 at least a third hole formed in said second flange;
a first bracket having a third flange and a fourth flange substantially perpendicularly attached to said third flange, said fourth flange having a lip adapted to engage one of said upwardly facing slats, said third flange having
15 at least a fourth hole, at least a fifth hole, and at least one slot;

at least a first bolt for attaching said first bracket to said first member by passing said at least a first bolt through said at least a fourth hole and said at least a
20 third hole;

at least a first screw for connecting said first bracket to the slat wall by passing said at least a first screw through said at least a fifth hole and engaging the slat wall;

25 a second bracket having a fifth flange, a sixth flange substantially perpendicularly attached to said fifth flange, and a seventh flange angularly connected to said fifth

flange, said sixth flange having a lip adapted to engage of one of said upwardly facing slats, said fifth flange having at least a sixth hole, and said seventh flange having at least an seventh hole;

5 at least a second bolt and corresponding nut for attaching said second bracket to said first bracket by passing said at least a second bolt through said at least a sixth hole and said at least one slot, and securing said corresponding nut on said at least a second bolt; and

10 at least a second screw for connecting said second bracket to the slat wall by passing said at least a second screw through said at least a seventh hole and engaging the slat wall.

15 55. The apparatus as described in claim 44, wherein the surface is a slat wall having upwardly facing slats and downwardly facing slats, and said attachment means further includes

20 at least a third hole formed in said second flange;
a first bracket having a third flange and a fourth flange substantially perpendicularly attached to said third flange, said fourth flange having a lip adapted to engage one of said upwardly facing slats, said third flange having at least a fourth hole, at least a fifth hole, and at least
25 one slot;

at least a first bolt for attaching said first bracket to said first member by passing said at least a first bolt

through said at least a fourth hole and said at least a third hole;

at least a first screw for connecting said first bracket to the slat wall by passing said at least a first screw through said at least a fifth hole and engaging the slat wall;

a second bracke having a fifth flange and a sixth flange substantially perpendicularly attached to said fifth flange, said fifth flange having at least a sixth hole, and
10 said sixth flange having a lip adapted to engage of one of said downwardly facing slats and at least a seventh hole;

at least a second bolt and corresponding nut for attaching said second bracket to said first bracket by passing said at least a second bolt through said at least a
15 sixth hole and said at least one slot, and securing said corresponding nut on said at least a second bolt; and

at least a second screw for connecting said second bracket to the slat wall by passing said at least a second screw through said at least a seventh hole and engaging the
20 slat wall.

56. A system for mounting a device to a surface using one of a plurality of devices that can be assembled from the system, the system comprising:

25 a shaft holder having a plurality of walls, a bottom having a first hole formed therein, and an open top so as to

form a receptacle for receiving the device, wherein the device is removably insertable into said receptacle;

a plurality of threaded rods;

a nut;

5 a clamping plate having a second hole centrally located therein;

a first member having a first flange and a second flange generally perpendicularly attached to said first flange, said first flange having a third hole formed
10 therein, and said second flange having at least a fourth hole formed therein; and

a second member having a third flange and a fourth flange generally perpendicularly attached to said third flange, said third flange having a fifth hole formed
15 therein, and said fourth flange having at least a sixth hole formed therein.

57. The system as described in claim 56, wherein the plurality of devices includes a clamp mount, a wall mount,
20 and a flat mount.

58. The system as described in claim 57, wherein said flat mount is assembled by placing shaft holder above the surface and the clamping plate below the surface, passing
25 one of said plurality of threaded rods through said first hole, through the surface, through said second hole, and screwing said nut on said threaded rod.

59. The system as described in claim 57, wherein said wall mount is assembled by connecting said shaft holder to said first flange by passing a first one of said plurality of threaded rods through said third hole and said first hole, securing said nut on said first threaded rod, and screwing a second one of said plurality of threaded rods through said at least a fourth hole and into the surface.

60. The system as described in claim 57, wherein said clamp mount is assembled by

connecting said shaft holder to said first flange by passing a first one of said plurality of threaded rods through said third hole and said first hole, and securing said nut on said first threaded rod;

connecting said first member and said second member by aligning said second flange and said fourth flange, and screwing at least a second one of said plurality of threaded cylindrical rods through said at least a fourth hole and said at least a sixth hole;

locating said clamping plate below the surface, said first flange above the surface and said third flange below the clamping plate; and

screwing a third one of said plurality of threaded rods through said fifth hole so as to engage said clamping plate and push said clamping plate upward to engage the surface.

61. The system as described in claim 57, further comprising

a bracket having a plurality of hooks adapted to engage vertically aligned slots on a panel wall, at least a seventh hole and at least an eighth hole;
at least one bolt.

62. The system as described in claim 61, wherein said wall mount is assembled by

10 connecting said shaft holder to said first flange by passing a first one of said plurality of threaded rods through said third hole and said first hole, and securing said nut on said first threaded rod;

attaching said bracket to said first member by passing
15 said at least one bolt through said at least a seventh hole and said at least a fourth hole; and

mounting said bracket to the panel wall by engaging said plurality of hooks in the vertically aligned slots and screwing at least a second one of said plurality of threaded
20 rods through said at least an eighth hole to contact the panel wall.

63. The system as described in claim 61, further comprising a plate having at least two tabs and at least a
25 ninth hole.

64. The system as described in claim 63, wherein said wall mount is assembled by:

connecting said shaft holder to said first flange by passing a first one of said plurality of threaded rods through said third hole and said first hole, and securing said nut on said first threaded rod;

attaching said plate to said bracket, and said bracket to said first member by passing said at least one bolt through said at least ninth hole, said at least seventh hole and said at least fourth hole;

mounting said plate to the panel wall by engaging said at least two tabs in the vertically aligned slots; and

mounting said bracket to the panel wall by engaging said plurality of hooks in the vertically aligned slots and screwing at least a second one of said threaded rods through said at least an eighth hole so as to push said plate into the panel wall.

65. The system as described in claim 57, further comprising:

a first bracket having a third flange and a fourth flange substantially perpendicularly attached to said third flange, said fourth flange having a first lip adapted to engage a first upwardly facing slot of a panel wall, said third flange having at least a seventh hole, at least an eighth hole, and at least one slot;

at least a first bolt for attaching said first bracket to said first member by passing said at least a first bolt through said at least a fourth hole and said at least a third hole;

5 at least a first screw;

a second bracket having a fifth flange, a sixth flange substantially perpendicularly attached to said fifth flange, and a seventh flange angularly connected to said fifth flange, said sixth flange having a second lip adapted to
10 engage a second upwardly facing slat, said fifth flange having at least a ninth hole, and said seventh flange having at least a tenth hole;

at least a second bolt and corresponding nut; and

at least a second screw.

15

66. The system as described in claim 65, wherein said wall mount is assembled by:

connecting said shaft holder to said first flange by passing a first one of said plurality of threaded rods
20 through said third hole and said first hole, and securing said nut on said first threaded cylindrical rod;

attaching said first bracket to said first member by passing said at least one bolt through said at least a seventh hole and through said at least fourth hole;

25 connecting said first bracket to the slat wall by engaging said first lip with the first upwardly facing slat,

and passing said at least a first screw through said at least an eighth hole and engaging the slat wall;

attaching said second bracket to said first bracket by passing said at least a second bolt through said at least a ninth hole and said at least one slot, and securing said corresponding nut on said at least a second bolt; and

connecting said second bracket to the slat wall by engaging said second lip with the second upwardly facing slat, and passing said at least a second screw through said at least a tenth hole and engaging the slat wall.

67. The system as described in claim 57, further comprising:

a first bracket having a third flange and a fourth flange substantially perpendicularly attached to said third flange, said fourth flange having a first lip adapted to engage an upwardly facing slat, said third flange having at least a seventh hole, at least an eighth hole, and at least one slot;

at least a first bolt;
at least a first screw;

a second bracket having a fifth flange and a sixth flange substantially perpendicularly attached to said fifth flange, said fifth flange having at least a ninth hole, and said sixth flange having a second lip adapted to engage a downwardly facing slat and at least a tenth hole;

at least a second bolt and corresponding nut; and

at least a second screw.

68. The system as described in claim 67, wherein said wall mount is assembled by:

5 connecting said shaft holder to said first flange by passing a first one of said plurality of threaded rods through said third hole and said first hole, and securing said nut on said first threaded rod;

10 attaching said first bracket to said first member by passing said at least a first bolt through said at least a seventh hole and said at least a fourth hole;

15 connecting said first bracket to the slat wall by engaging said first lip with the first upwardly facing slat, and passing said at least a first screw through said at least an eighth hole and engaging the slat wall;

 attaching said second bracket to said first bracket by passing said at least a second bolt through said at least a ninth hole and said at least one slot, and securing said corresponding nut on said at least a second bolt; and

20 connecting said second bracket to the slat wall by engaging said second lip with the downwardly facing slat, and passing said at least a second screw through said at least a tenth hole and engaging the slat wall.

1/13

FIG. 1

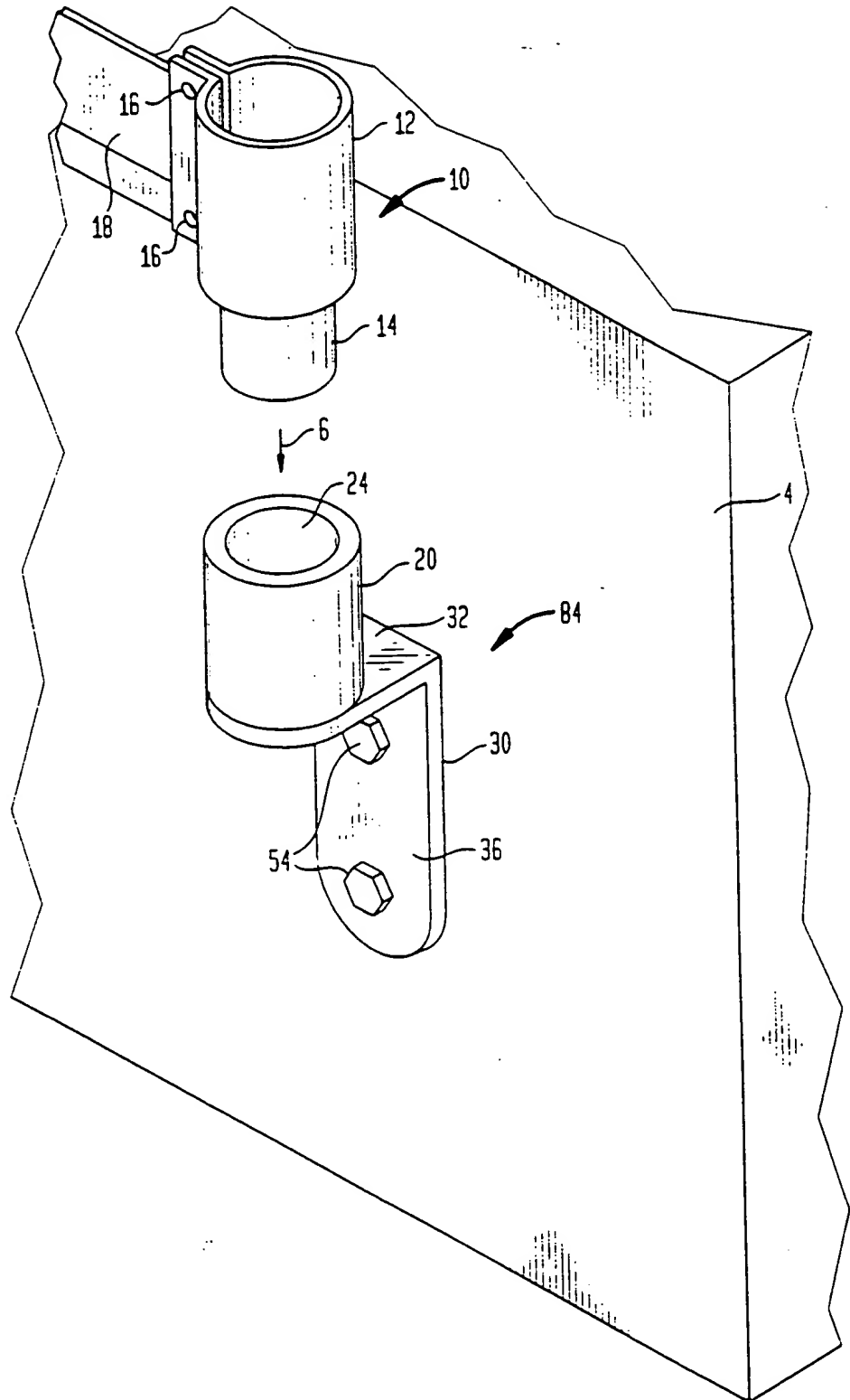


FIG. 3

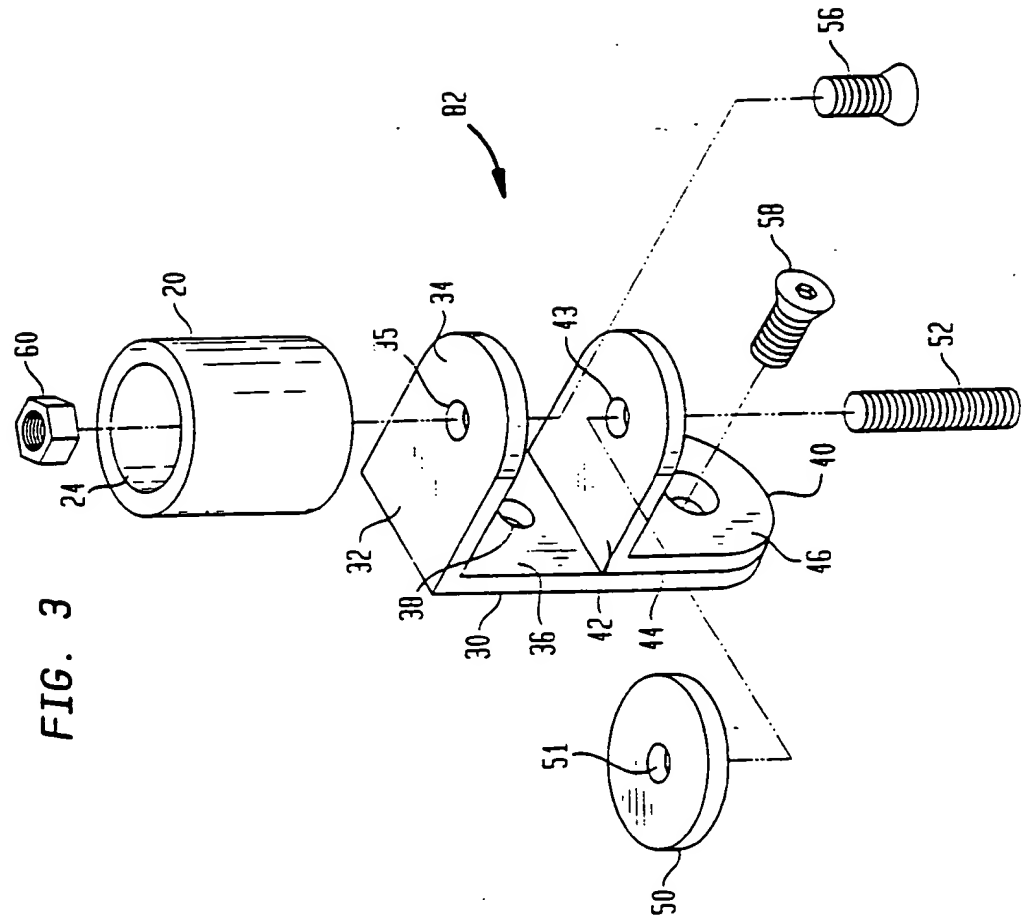
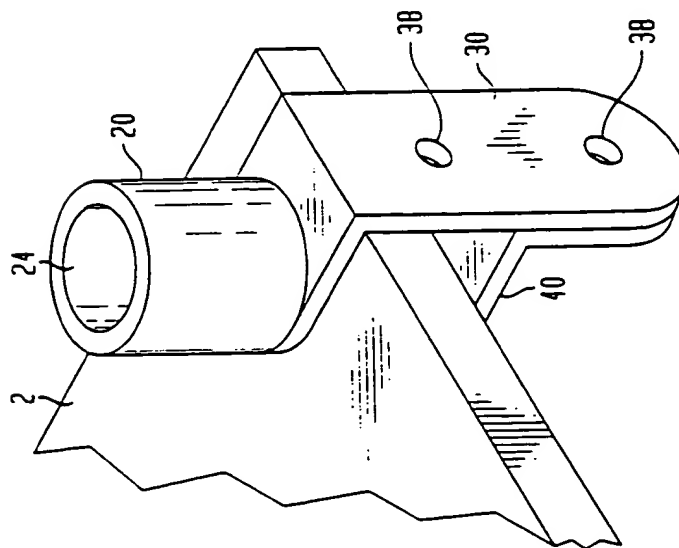


FIG. 2



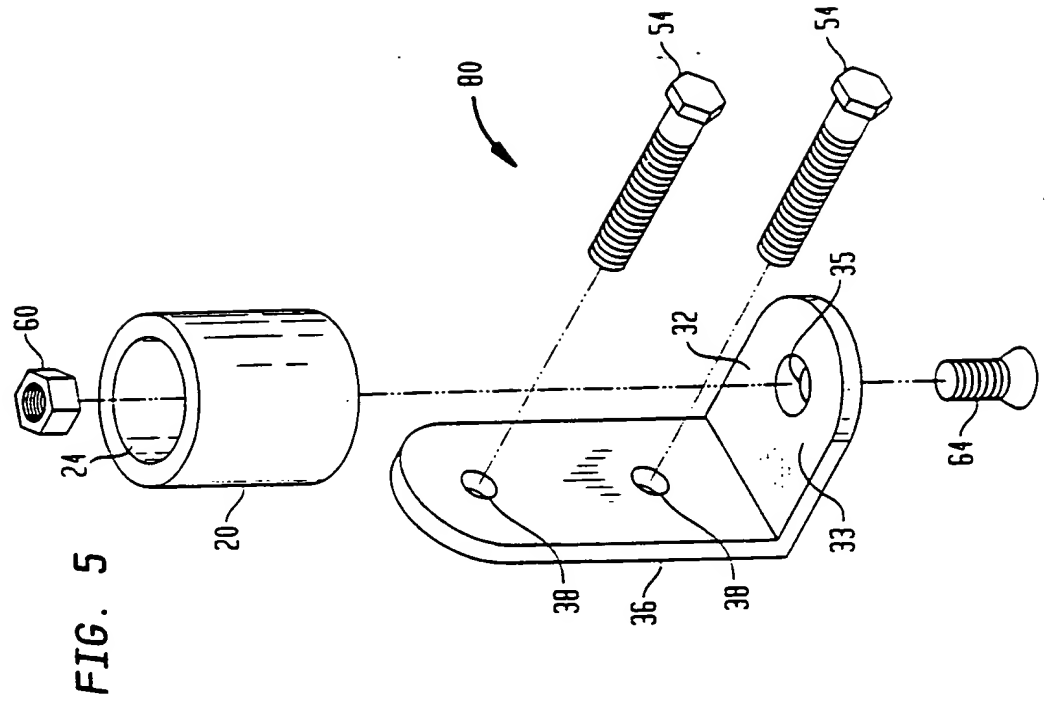
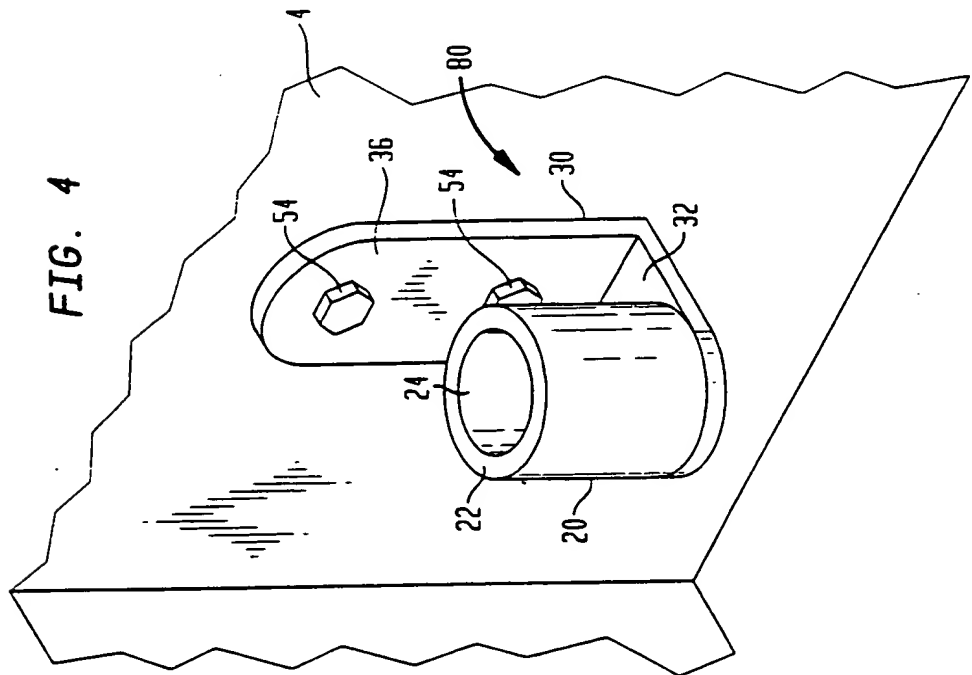


FIG. 7

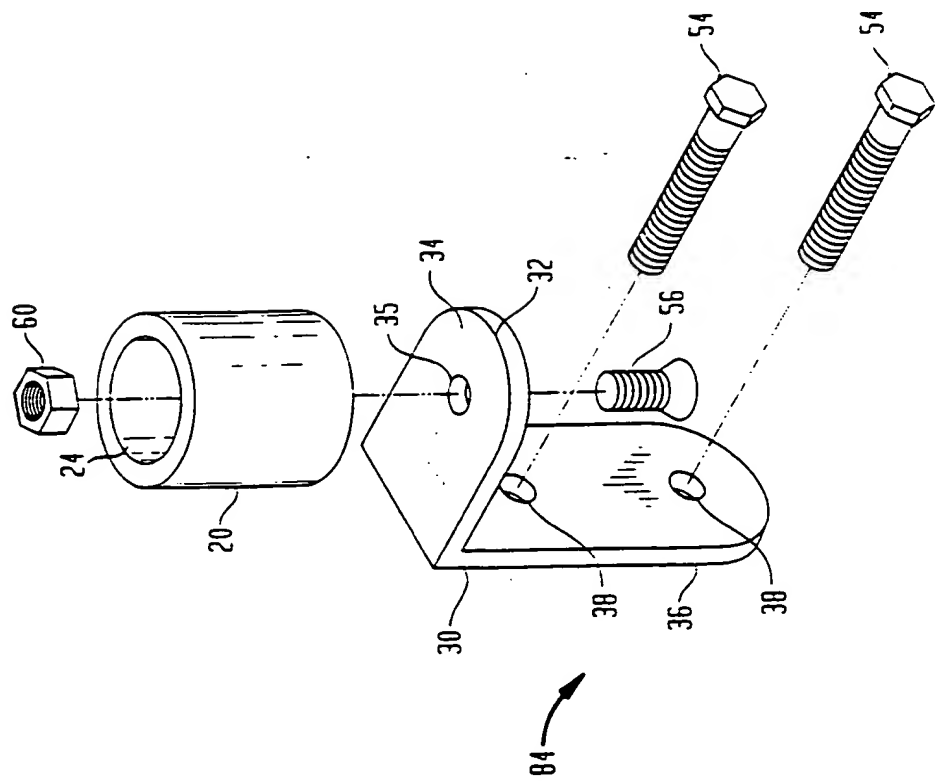
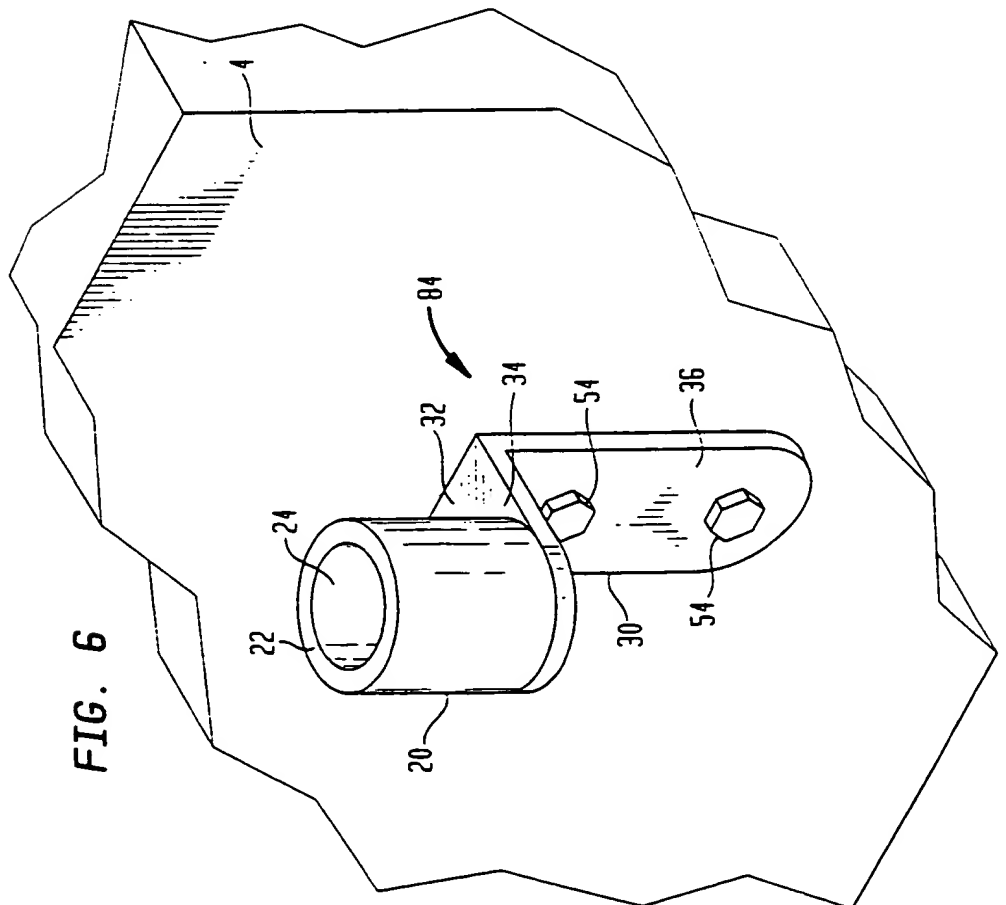


FIG. 6



5/13

FIG. 8

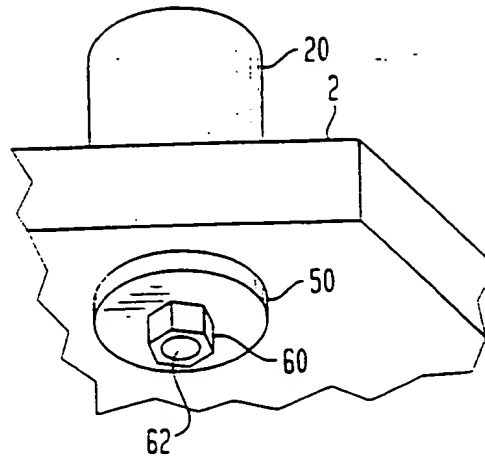
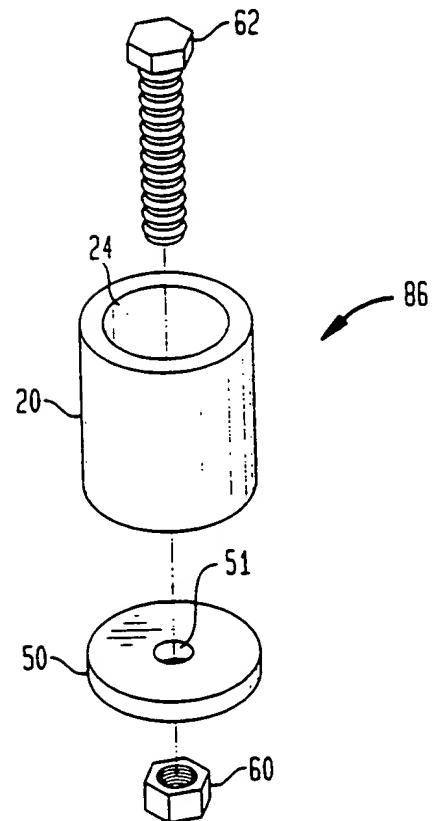


FIG. 9



6/13

FIG. 10A

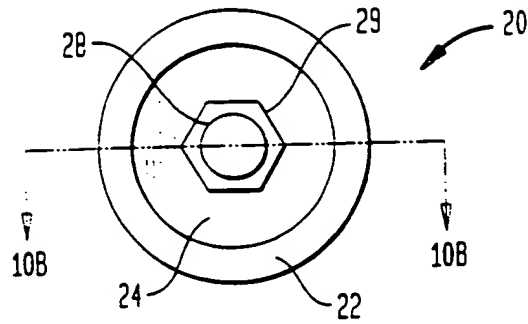


FIG. 10B

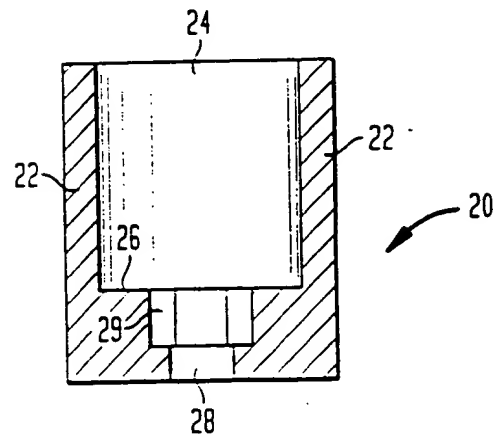


FIG. 11A

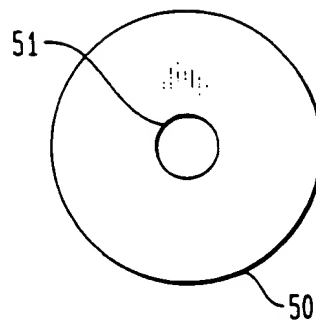


FIG. 11B

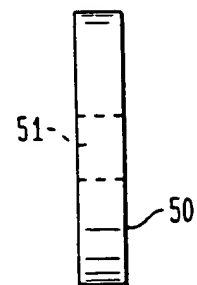


FIG. 12C

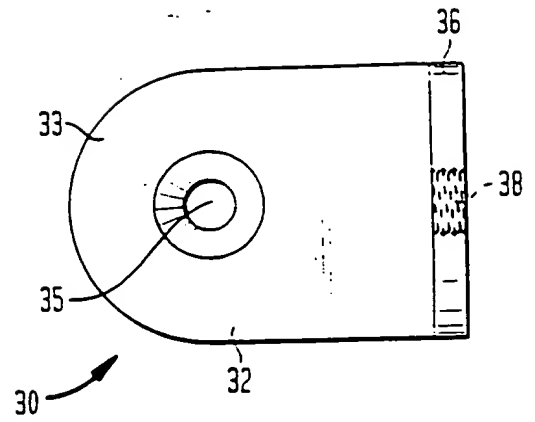


FIG. 12A

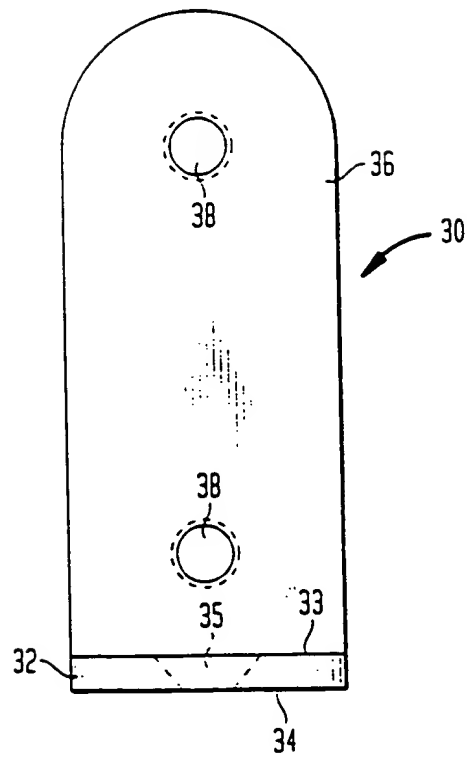


FIG. 12B

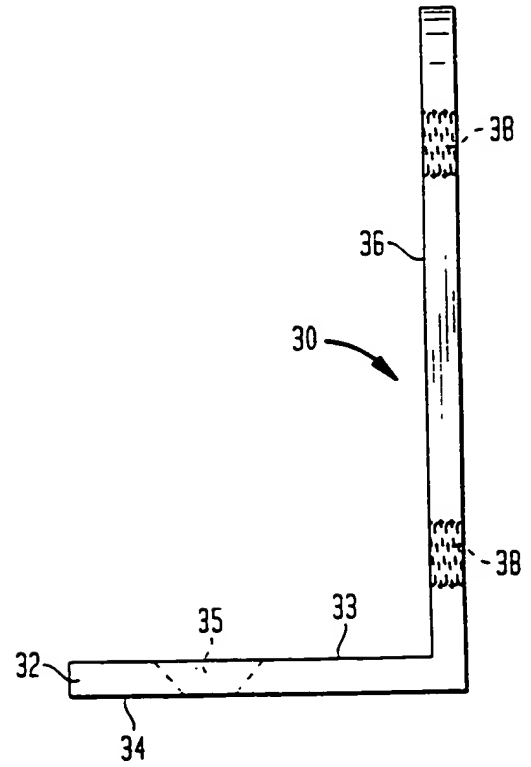


FIG. 13C

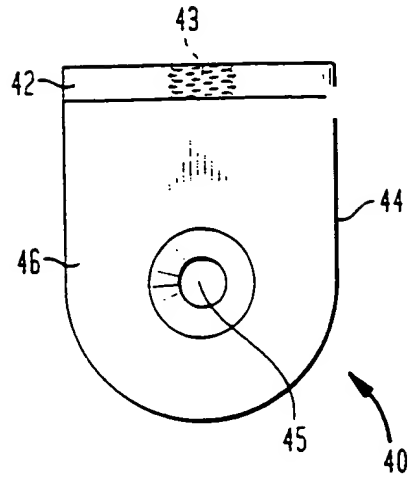


FIG. 13A

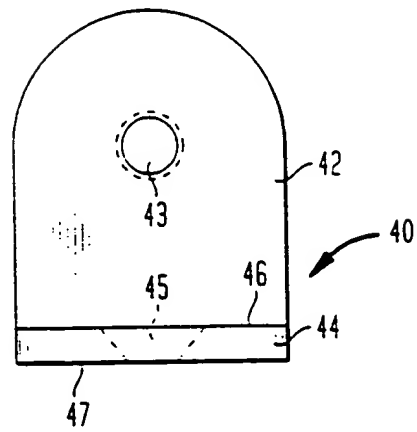


FIG. 13B

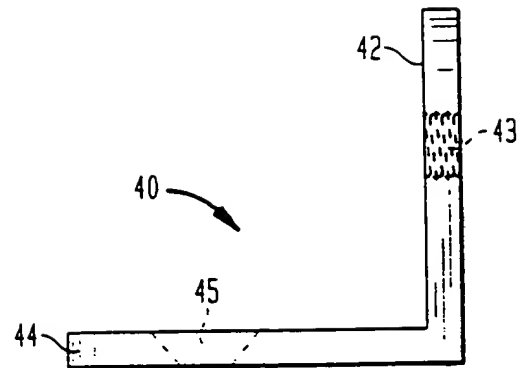
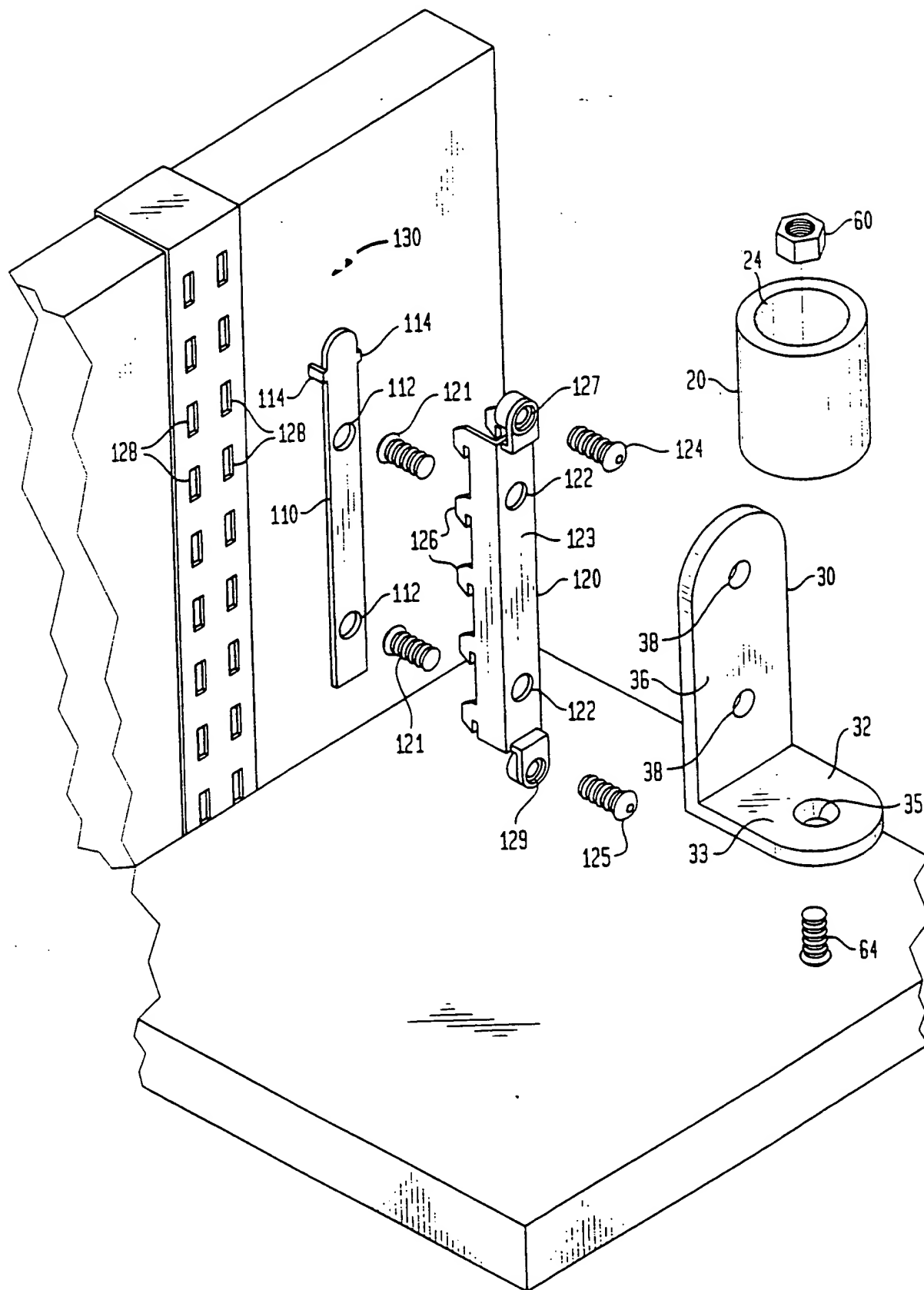
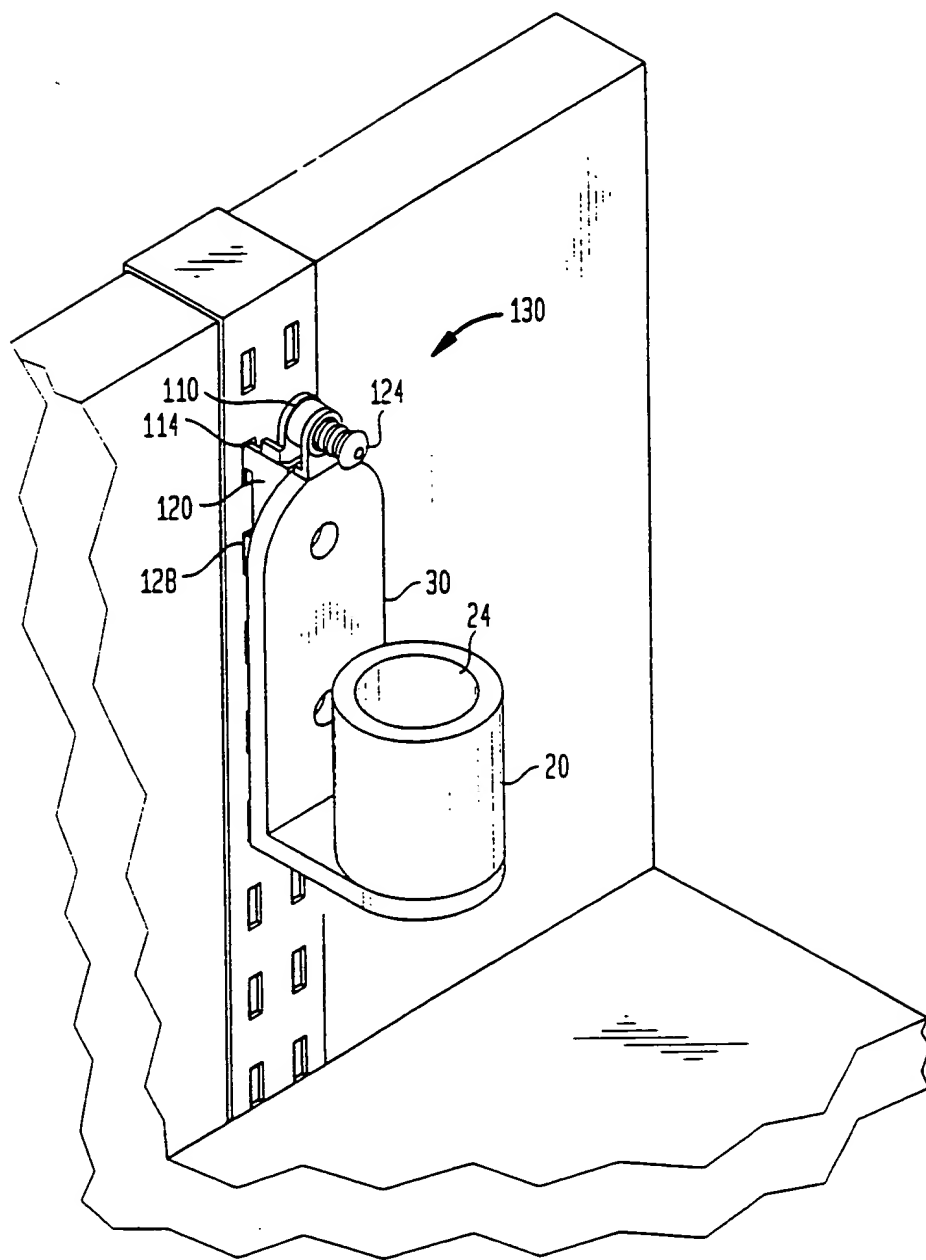


FIG. 14



10/13

FIG. 15



11/13

FIG. 16

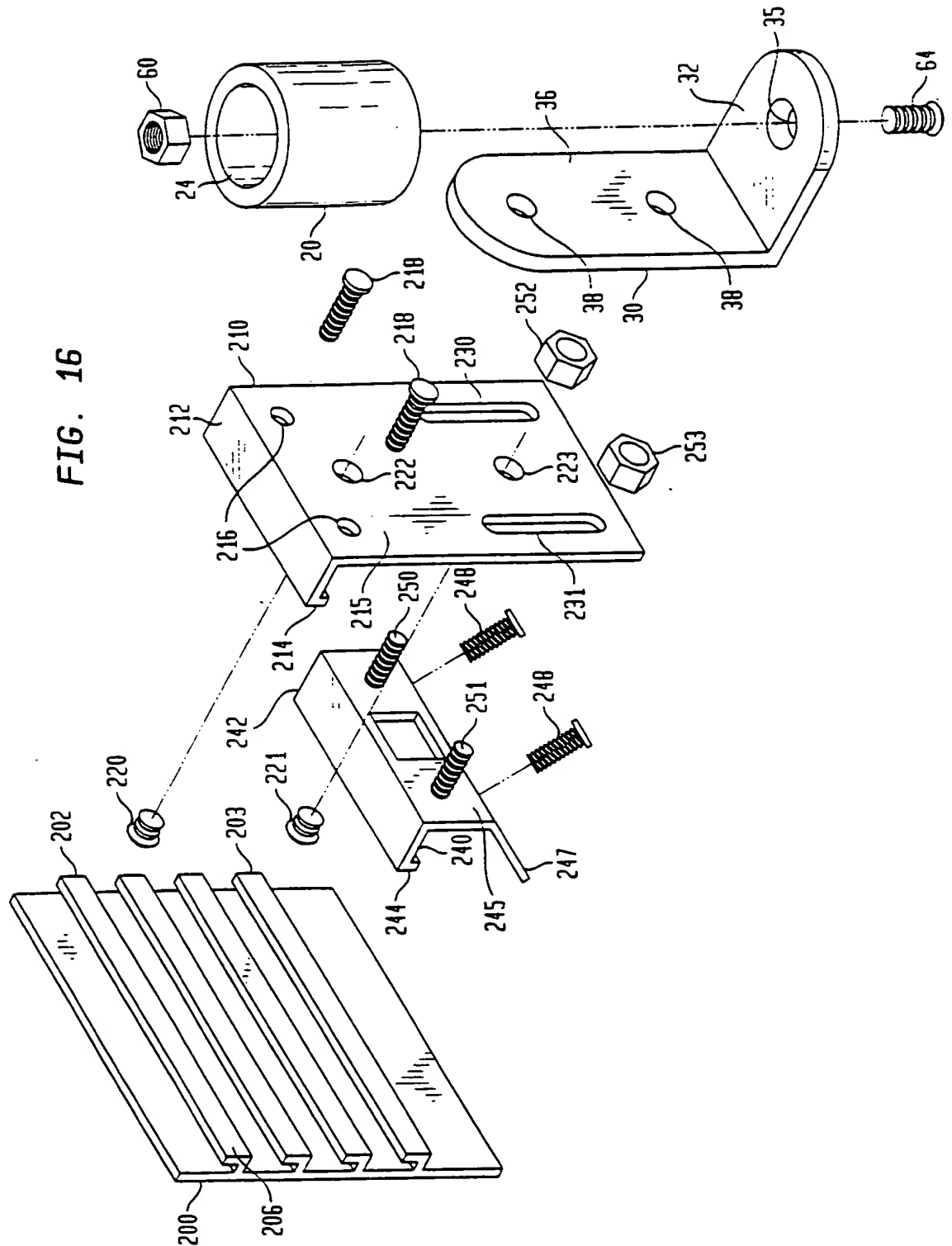


FIG. 17

